

**ABSTRACT:**

Probes labeled with 1,2-dioxetane precursors can be employed in a variety of assays. The probes may be nucleic acid, peptide nucleic acid, proteins including enzyme, antibody or antigen, steroid, carbohydrate, drug or non-drug hapten. The probe is provided with a 1,2-dioxetane precursor bound thereto, generally either covalently, or a strong ligand bond. The dioxetane precursor moiety is converted to a bound 1,2-dioxetane by exposure to singlet oxygen. These dioxetane (labels) either spontaneously decompose, or are induced to decompose by an appropriate trigger to release light. The trigger may be a change in pH temperature, or an agent which removes a protective group. Assay formats in which these 1,2-dioxetane labeled probes and referents may be used to include hybridization assays, immuno assays, gel-based assays and Capillary Zone Electrophoresis.

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